

## Progression of Scientific skills

Teach the knowledge through the skills.

There are 5 skill types that develop through the school. Each skill type should be covered at least once through the academic year. The bullet points provide success criteria for each skill. This document shows you the progression of each skill type throughout the school.

Skill	Key stage	statement
Observing	KS1	To observing closely, using simple equipment. <ul style="list-style-type: none"> <li>• Look and notice</li> <li>• Think about what I have seen</li> <li>• Explore how different equipment helps me observe</li> </ul>
	LKS2	To make systematic and careful observations. <ul style="list-style-type: none"> <li>• Look and notice</li> <li>• Think about what I have seen</li> <li>• Observe using a system</li> </ul>
		To identify similarities, differences or changes in simple scientific ideas and processes. <ul style="list-style-type: none"> <li>• What do people think already/ What was the process?*</li> <li>• How have their ideas/ the process changed?*</li> <li>• What do I think about their ideas/ the process?*</li> </ul> <p><small>*Omit the words you don't need. Introduce chn to existing scientist's thoughts on a subject. Show chn a scientific process, and get them to share their thoughts on what you have shown them using the above SC.</small></p> <p><small>** Repeated objective (found also in reporting)</small></p>
		To record findings using simple scientific language /drawings/ labelled diagrams/ a key/ bar charts /tables.* <ul style="list-style-type: none"> <li>• What did I find out?</li> <li>• Which information is important?</li> <li>• How am I going to record it?</li> </ul> <p><small>*Omit the words you don't need – choose one way to record.</small></p>
	UKS2	To take measurements using scientific equipment. <ul style="list-style-type: none"> <li>• Use the equipment with increasing accuracy and precision.</li> <li>• Take repeat readings where appropriate.</li> <li>• Use a range of equipment.</li> </ul> <p><small>Years 5 and 6 begin to take ownership over their science learning, choosing when to use observations and how they record their findings.</small></p>
Questioning	KS1	To ask simple questions and recognise that they can be answered in different ways <ul style="list-style-type: none"> <li>• Use question words: What, Why, Where, When, How.</li> <li>• Think about how my questions could be answered.</li> <li>• Know research, observations and simple tests can be used to answer my questions.</li> </ul>
		To use my own observations and ideas to suggest answers to questions. <ul style="list-style-type: none"> <li>• What do I want to know?</li> <li>• What have I seen that can help me find an answer?</li> <li>• What ideas do I have that can help me find an answer?</li> </ul>
		To gather and record data to help me answer questions. <ul style="list-style-type: none"> <li>• Use observations/ pattern seeking/ simple tests to collect data.</li> <li>• Record what I found out in a way that I understand.</li> <li>• Explain the answer to a question using what I have found out.</li> </ul>
	LKS2	To ask relevant questions and use different types of scientific enquiries to answer them.

		<ul style="list-style-type: none"> <li>• Use question words: What, Why, Where, When, How.</li> <li>• Ask questions about a given subject.</li> <li>• Use research, observations and simple tests to answer my questions.</li> </ul>
		<p>To use scientific evidence to answer questions/ to support my findings.*</p> <ul style="list-style-type: none"> <li>• What do scientists say already?</li> <li>• What data is there already?</li> <li>• Give an answer or explanation using this information.</li> </ul> <p><i>*Omit the words you don't need, choose to either answer questions or support my findings.</i></p>
		<p>To gather, record, classify and present data in a variety of ways to help me answer a question.</p> <ul style="list-style-type: none"> <li>• What is the question?</li> <li>• What am I going to do to find an answer?</li> <li>• Answer a question using my findings from an enquiry.</li> </ul> <p><i>Repeated objective (found also in gathering and recording data)</i></p>
	UKS2	<p>To plan different types of scientific enquiries to answer questions.</p> <ul style="list-style-type: none"> <li>• What enquiry type will I use? (Observation/ pattern seeking/ fair or comparative test/ research/ identifying and classifying)</li> <li>• How will I record my findings?</li> <li>• Recognise and control variables where necessary.</li> </ul>
Investigating and using different enquiry types	KS1	<p>To perform simple tests</p> <ul style="list-style-type: none"> <li>• Have a question.</li> <li>• Use equipment.</li> <li>• Observe/ pattern seek/ use a fair or comparative test/ research/ identify and classify)*</li> </ul> <p><i>*Omit the words you don't need – choose only one enquiry type to complete.</i></p>
	LKS2	<p>To set up simple practical enquiries.</p> <ul style="list-style-type: none"> <li>• What am I trying to find out?</li> <li>• Which enquiry type will I use? (Observation/ pattern seeking/ fair or comparative test/ research/ identifying and classifying)</li> <li>• What equipment do I need?</li> </ul>
	UKS2	<p>To use test results to set up further comparative and fair tests.</p> <ul style="list-style-type: none"> <li>• Use what I know to make predictions</li> <li>• Consider the equipment I may need to keep or change</li> <li>• Consider the variables I may need to keep the same or change</li> </ul> <p>To take measurements using a range of scientific equipment.</p> <ul style="list-style-type: none"> <li>• Practise to increase the accuracy and precision</li> <li>• Know what unit it equipment measures in</li> <li>• Take repeat readings when appropriate</li> </ul>
Collecting and recording data	KS1	<p>To identify and classify.</p> <ul style="list-style-type: none"> <li>• Group items</li> <li>• Give groups names</li> <li>• Give explanations for groupings</li> </ul>
		<p>To gather and record data to help me answer a question.</p> <ul style="list-style-type: none"> <li>• What is the question?</li> <li>• What have I found out?</li> <li>• How can I record what I have found out?</li> </ul>
	LKS2	<p>To gathering, record, classify and present data in a variety of ways to help me answer questions.</p> <ul style="list-style-type: none"> <li>• What is the question?</li> <li>• What am I going to do to find an answer?</li> <li>• Answer a question using my findings from an enquiry.</li> </ul> <p><i>Repeated objective (found also in questioning)</i></p> <p>To take accurate measurements using standard units.</p>

		<ul style="list-style-type: none"> <li>• Use a range of equipment, including thermometers and data loggers</li> <li>• Know what each standard unit is measuring</li> <li>• Practice with the equipment to increase accuracy and precision</li> </ul>
	UKS2	<p>To take measurements using a range of scientific equipment.</p> <ul style="list-style-type: none"> <li>• Practise to increase the accuracy and precision</li> <li>• Know what unit it equipment measures in</li> <li>• Take repeat readings when appropriate</li> </ul> <p><i>Repeated objective (found also in investigating and using different enquiry types)</i></p>
		<p>To record data and results of increasing complexity using scientific diagrams and labels.</p> <ul style="list-style-type: none"> <li>• How will I record the data? (Classification keys/ tables/ scatter graphs/ bar and line graphs)</li> <li>• What am I trying to show?</li> <li>• What does my data prove?</li> </ul>
Reporting	KS1	<p>To orally suggest answers to questions using my ideas and observations.</p> <ul style="list-style-type: none"> <li>• What is the question?</li> <li>• What do I know already?</li> <li>• What can I see to help me answer the question?</li> </ul>
	LKS2	<p>To report on findings from enquiries.</p> <ul style="list-style-type: none"> <li>• Give an oral/ written explanation*</li> <li>• Use results to draw conclusions</li> <li>• Use scientific language</li> </ul> <p><i>*Omit the words you don't need – provide opportunity to give oral reports and written reports (can be in the form of displays)</i></p>
		<p>To use results to draw simple conclusions.</p> <ul style="list-style-type: none"> <li>• Use existing findings to make further predictions for future enquiries</li> <li>• Suggest improvements</li> <li>• Raise further questions</li> </ul> <p><i>These do not need to be the children's own results. To focus on the skill provide them with existing data.</i></p>
		<p>To identify similarities, differences or changes in simple scientific ideas and processes.</p> <ul style="list-style-type: none"> <li>• What do people think already/ What was the process?*</li> <li>• How have their ideas/ the process changed?*</li> <li>• What do I think about their ideas/ the process?*</li> </ul> <p><i>*Omit the words you don't need. Introduce chn to existing scientist's thoughts on a subject. Show chn a scientific process, and get them to share their thoughts on what you have shown them using the above SC.</i></p> <p><b>** Repeated objective (found also in questioning)</b></p>
UKS2	<p>To orally report or present / write a report showing findings from enquiries.*</p> <ul style="list-style-type: none"> <li>• What conclusions can I make using scientific language?</li> <li>• To explain findings based on causal relationships</li> <li>• Include my opinions on the degree of trust in the results</li> </ul> <p><i>*Omit the words you don't need. Find opportunities for chn to report findings both orally and in writing;</i></p>	
	<p>To identify scientific evidence that has been used to support or refute ideas or arguments.</p> <ul style="list-style-type: none"> <li>• What is my opinion?</li> <li>• What do other scientists say?</li> <li>• What evidence can I use to prove my opinion?</li> </ul>	